Vaccine-Preventable Disease

Surveillance Guidelines

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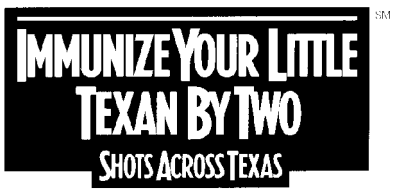


Immunization Division
Texas Department of Health

1-800-252-9152

Revised 3-15-99

Diphtheria

CLINICAL CASE DEFINITION: An upper respiratory tract illness typically characterized by sore throat, low-grade fever, and an adherent membrane of the tonsil(s), pharynx, and/or nose.

REPORTING: Report immediately to local or regional health department at **(800) 705-8868** or the Texas Department of Health Immunization Division at **(800) 252-9152**.

INVESTIGATION FORM: There is no specific case-investigation form, however, a detailed written report will be required by local health department if a case is confirmed. In the event of death, please provide copies of the hospital discharge summary, death certificate, and autopsy report.

CASE CLASSIFICATION:

- **Confirmed:** A clinically compatible case that is laboratory confirmed or is epidemiologically linked to a laboratory-confirmed case.
- **Probable:** A clinically compatible case that is not laboratory confirmed and is not epidemiologically linked to a laboratory-confirmed case.

LABORATORY CONFIRMATION:

- Isolation of *Corynebacterium diphtheriae* from a clinical specimen.
- Histopathologic diagnosis of diphtheria.

CONTROL MEASURES:

- Reports of suspected diphtheria should be investigated **immediately**.
- Identify close contacts.
- Only close contacts of a patient with culture-confirmed or suspected diphtheria should be considered at increased risk for acquiring secondary disease. Such contacts include all household members and other persons with a history of habitual close contact with the patient, as well as those directly exposed to oral secretions of the patient.
- Any patient for whom the decision has been made to treat with diphtheria antitoxin should be considered a suspected case of diphtheria until appropriate laboratory testing confirms or rules out the diagnosis.
- Close contacts should be cultured, receive prompt antimicrobial chemoprophylaxis, and be examined daily for seven days for evidence of disease. Do not wait for culture results before treating contacts.
- Recommended prophylaxis is a 7-10 day course of oral erythromycin (children-40 mg/kg/day, and adults-1 g/day)
- Identified carriers of *C. diphtheriae* should be cultured after they complete antimicrobial therapy. Those who continue to carry the organism should received an additional 10-day course of oral erythromycin and follow-up cultures.
- All close contacts who have received fewer than three (3) doses of diphtheria toxoid or whose vaccination status is unknown should receive an immediate dose of a diphtheria toxoid-containing preparation appropriate for their age and should complete the primary series according to the recommended schedule.
- Close contacts who have completed a primary series of three or more doses of diphtheria toxoid and who have not been vaccinated with diphtheria toxoid within the previous five years should receive a booster dose appropriate for their age.
- Patient should be kept in strict isolation until two cultures from both throat and nose taken not less than 24 hours apart , and not less than 24 hours after cessation of antimicrobial therapy, fail to show diphtheria bacilli. If cultures are not possible, patient should be kept in isolation for 14 days following appropriate antibiotic treatment.

Acute Hepatitis B

CLINICAL CASE DEFINITIONS:

- **Acute:** An acute onset of symptoms and jaundice or elevated serum aminotransferase levels. Clinical signs and symptoms of acute Hepatitis B virus (HBV) infection include anorexia, nausea, malaise, vomiting, jaundice, dark urine, clay colored or light stools, and abdominal pain. Occasionally, extrahepatic manifestations occur and include skin rashes, arthralgia, and arthritis.
- **Chronic:** A person who is HBsAg-positive for 6 months or who is IgM anti-HBc-negative and HBsAg-positive.

CASE CLASSIFICATION AND LABORATORY CONFIRMATION:

- **Confirmed acute:** A clinically compatible case that is positive for IgM antibody to hepatitis B core antigen.
- **Confirmed Chronic:** HBsAg positivity in serum for at least 6 months or IgM anti-HBc-negative and HBsAg-positive.

MODES OF TRANSMISSION:
Transfusion of blood or blood products, sharing or reusing nonsterilized needles or syringes, percutaneous or mucous membrane exposure to blood or body fluids, and sexual activity. Transmission can occur after sharing razors, toothbrushes, or non-sterile manicure equipment with an infected person. Transmission also occurs as a result of tattooing and piercing. SEE ALSO PERINATAL HEPATITIS B GUIDELINES.

REPORTING OF CASES:
Report all acute hepatitis B cases to local or regional health department at **(800) 705-8868** or the Texas Department of Health Immunization Division at **(800) 252-9152**. **NOTE:** Perinatal cases and HBsAg-positive pregnant women (acute and chronic cases) should also be reported (SEE PERINATAL HEPATITIS B GUIDELINES).

INVESTIGATION FORMS:
Completed case track records must be completed by the local or regional health department and submitted to the TDH Immunization Division on all laboratory confirmed acute cases within 30 days of initial report.

CONTROL MEASURES:

- ***Follow universal precautions to prevent exposure to blood and body fluids.***

- ***Disinfect all equipment contaminated with blood or infectious body fluids.***

- ***Investigate contacts and source of infection.*** When two or more cases occur in association with some common exposure, conduct a search for additional cases. If plasma derivative such as antihemophilic factor, fibrinogen, pooled plasma or thrombin is implicated, withdraw lot from use and trace all recipients of the same lot in a search for additional cases.

- *Immunize contacts (NOTE: Any person testing positive for HBsAg is potentially infectious):*

  Sexual contacts:
  Susceptible sexual partners should receive both a single dose of 0.06 mL/kg hepatitis B immune globulin (HBIG) and the first hepatitis B vaccination at the same time within 14 days of the last sexual contact. The remaining two hepatitis B vaccinations should be administered according to the recommended schedule. Testing of sexual partners for susceptibility can be considered if it does not delay vaccination beyond 14 days.

Nonsexual household contacts:
Infants who have not completed the three-dose hepatitis B vaccine series, and who have close contact with acutely infected primary care givers should receive HBIG and complete the hepatitis B vaccine series. HBIG is not indicated for other household contacts unless they have identifiable blood exposure, such as sharing of toothbrushes or razors. All susceptible contacts should be immunized as quickly as possible because of possible future exposures.

Percutaneous or mucous membrane exposures:
Determine whether or not the source and HBsAg status of the blood is known. Determine the immunization status of the exposed person(s). Determine if the exposed person(s) has documentation of an adequate antibody response ($\geq$ 10 milli-IUs/mL) after vaccination (i.e. classify as a "responder" or "non-responder").

For unimmunized persons exposed to a HBsAg-positive source, administer a single dose of HBIG (0.06 mL/kg) intramuscularly as soon as possible after the exposure and start the hepatitis B vaccine series. HBIG should not be administered beyond 7 days after exposure. If the source is HBsAg-negative, has not been tested or status is not known, initiate the hepatitis B vaccine series in the exposed person.

Postexposure prophylaxis is not needed for persons with documentation of an adequate antibody response.

For known non-responders exposed to a HBsAg-positive source or a known high-risk source, administer HBIG and initiate the hepatitis B vaccine series.

For persons whose response to immunization is unknown, test for anti-HBs. If the antibody response is adequate, do not treat. If inadequate, administer HBIG and one dose of hepatitis B vaccine.

Summary of recommendations for hepatitis B prophylaxis following percutaneous or permucosal exposure:

Exposed Person	Treatment When Source is Found to Be:		
	HBsAg-positive	HBsAg-negative	Source not tested or unknown
Unvaccinated	HBIG x 1* and initiate HB vaccine series	Initiate HB vaccine series	Initiate HB vaccine series
Previously vaccinated Known responder**	No treatment	No treatment	No treatment
Previously vaccinated Known nonresponder	HBIG x 2 or HBIG x 1 plus 1 dose HB vaccine	No treatment	If known high-risk source, treat as if source were HBsAg-positive
Previously vaccinated Response unknown	Test exposed for anti-HBs 1. If adequate***, no treatment 2. If inadequate, HBIG x 1 plus HB vaccine booster dose	No treatment	Test exposed for anti-HBs 1. If adequate***, no treatment 2. If inadequate, HB vaccine booster dose

* HBIG dose 0.06 ml/kg IM
** Responder is defined as a person with documentation of adequate levels of anti-HBs post vaccination.
*** Adequate anti-HBs is $\geq$ 10 mIU/mL

RECOMMENDED PREVENTION STRATEGIES:

- P Vaccinate all infants, children, and adolescents.
- P Prevent hepatitis B acute and/or chronic infections in infants born to HBsAg-positive women (see PERINATAL HEPATITIS B GUIDELINES).
- P Vaccinate users of intravenous drugs. Vaccinate users of illicit drugs.
- P Vaccinate sexually active adults. Those who are diagnosed with a sexually transmitted disease or have had more than one sex partner in the previous six months should be vaccinated.
- P Vaccinate health care workers and others at risk of exposure to blood or blood-contaminated body fluid.
- P Vaccinate susceptible hemodialysis patients.
- P Vaccinate patients diagnosed with a specific clotting disorder who are receiving clotting factor concentrates. Prevaccination testing for HBsAg and anti-HBc is recommended for patients who already have received multiple infusions of clotting factors.
- P Vaccinate household contacts and sexual partners of hepatitis B virus carriers.
- P Screen adoptees from countries where hepatitis B is endemic. Vaccinate susceptible family members and other household contacts if adoptee is HBsAg-positive.
- P Vaccinate international travelers to areas where hepatitis B infection is of high or intermediate endemicity.
- P Vaccinate residents and staff of institutions for the developmentally disabled.
- P Vaccinate inmates of long-term correctional facilities.

Perinatal Hepatitis B

CLINICAL CASE DEFINITIONS:

- **Acute:** An acute onset of symptoms and jaundice or elevated serum aminotransferase levels. Clinical signs and symptoms of acute Hepatitis B virus (HBV) infection include anorexia, nausea, malaise, vomiting, jaundice, dark urine, clay colored or light stools, and abdominal pain. Occasionally, extrahepatic manifestations occur and include skin rashes, arthralgia, and arthritis.
- **Chronic:** A person who is HBsAg-positive for 6 months or who is IgM anti-HBc-negative and HBsAg-positive.
- **Perinatal:** HBsAg-positive infants born to HBsAg-positive women. Perinatal HBV infection in the newborn may range from asymptomatic to fulminant hepatitis; however, most newborns do not develop any clinical signs or symptoms. **NOTE:** The majority of chronic infections in infants can be prevented with appropriate immunoprophylaxis (see Control Measures).

PERINATAL AND HORIZONTAL TRANSMISSION:
Transmission from mother to infant during the perinatal period occurs in infants born to HBsAg-positive women. Infants not infected during the perinatal period remain at risk of infection by person-to-person or horizontal transmission during the first 5 years of life.

REPORTING OF CASES:
Report all HBsAg-positive pregnant women (acute and chronic cases) and perinatal cases to a local or regional health department at **(800) 705-8868** or the Texas Department of Health (TDH), Immunization Division at **(800) 252-9152**. **NOTE:** All acute hepatitis B cases must be reported weekly (SEE HEPATITIS B GUIDELINES).

INVESTIGATION FORMS:
Completed summary reports must be submitted to the TDH Immunization Division by local or regional health department on all HBsAg-positive pregnant women within 30 days of initial report, on all infants born to HBsAg-positive women within 30 days of birth, and on all sexual contacts and household contacts of HBsAg-positive women within 30 days of initial report. Forms may be obtained from the Perinatal Hepatitis B Prevention Program at (800) 252-9152.

CASE CLASSIFICATION AND LABORATORY CONFIRMATION:

- **Confirmed acute:** A clinically compatible case that is positive for IgM antibody to hepatitis B core antigen.
- **Confirmed perinatal:** HBsAg positivity in infant age 1 month through 24 months of age who was born to a HBsAg-positive mother.
- **Confirmed Chronic:** HBsAg positivity in serum for at least 6 months or IgM anti-HBc-negative and HBsAg-positive.

CONTROL MEASURES:

- ***Immunize infant and contacts of mother (NOTE: Any person testing positive for HBsAg is potentially infectious):***

  Infants born to HBsAg-positive women: Administer 0.5 mL IM HBIG and hepatitis B vaccine within 12 hours of birth. The HBIG and vaccine should be given at the same time but at different sites. HBIG should not be administered later than 7 days post-partum. The second hepatitis B vaccine dose should be given at least 1 month after the first dose. The third vaccine dose should be administered at least 6 months after the first dose and at least 4 months after the second dose.

Sexual and nonsexual household contacts: If mother is an acute case, see Acute Hepatitis B Guidelines for appropriate treatment of contacts. Susceptible household and sexual contacts of women who are hepatitis B virus carriers should be vaccinated.

- ***Screen all pregnant women for HBsAg:*** All pregnant women should be tested for evidence of hepatitis B infection twice. HBsAg testing should be included with other routine prenatal testing, preferably during the first prenatal visit and again upon admission to the hospital for delivery.

- ***Conduct postvaccination testing on infants born to HBsAg-positive mothers:*** Post vaccination serological testing for HBsAg and anti-HBs at least 3 months following the third dose of hepatitis B vaccine identifies (1) an infant as a responder (HBsAg-negative and anti-HBs positive), (2) an infant as a nonresponder (HBsAg-negative, anti-HBs negative), or (3) a vaccine failure (HBsAg-positive, anti-HBs negative). Nonresponders should be given two more doses of hepatitis vaccine separated by at least 1 month and retested. If test results for anti-HBs remain negative, a third dose should be administered 4 - 5 months after the second dose. Non-responders should be referred for clinical follow-up. The failure of vaccine to protect against chronic hepatitis B infections may be caused by either vaccine failure or infection by a hepatitis B variant virus. For more information about submitting specimens to the CDC for further analysis contact the TDH Perinatal Hepatitis B Prevention Program at (800)252-9152.

LABORATORY SPECIMEN LABELING AND SHIPPING INSTRUCTIONS FOR MATERNAL AND CHILD HEALTH (MCH) PROVIDERS:

To submit specimens to the TDH laboratory for screening pregnant women and conducting susceptibility testing, providers must have a Maternal and Child Health (MCH) provider identification number on file with the laboratory.

Specimen Collection:

- Collect 6-8 mL whole blood aseptically in a tube without additives ("red top" or "clot" tube)
- Whole clotted blood should be submitted. Serum separation should not be performed. Do not freeze specimen. Refrigerate specimens at 2 - 8°C prior to shipment.
- Rubber tube stoppers that have been removed to extract clots often leak in transit and pose a hazard when opened.
- Refrigeration of specimens is not required during shipment.

Specimen Submission Forms:

- Medical Serology Forms G-32E or G-32E1 (with and without HIV test)--submitted with serum to request prenatal screening tests which include HBsAg testing for pregnant women
- G-1 Specimen Submission Form--submitted with serum for susceptibility testing of contacts and post-vaccination testing of infants. Under the section "Brief Clinical History" write "MCH follow-up," and check "Hepatitis B-surface antibody" and "Hepatitis B-surface antigen."

Information and consultation on testing are available by calling the TDH Bureau of Laboratories, Microbiological Division, Medical Serology Branch, at (512)458-7592 or (512)458-7514.

Shipping:

Specimens should be sent via priority mail (first class), bus, or overnight delivery to:

Bureau of Laboratories
Texas Department of Health
1100 West 49th Street
Austin, TX 78756

LABORATORY TESTING AND VACCINE AVAILABLE TO NON-MCH PROVIDERS

HBIG, hepatitis B vaccine, and post-vaccination testing for an infant born to a HBsAg-positive mother is provided free of charge by the TDH. Pre-vaccination susceptibility testing and hepatitis B vaccine is also available for the household and sexual contacts of HBsAg-positive pregnant women.

All laboratory testing for clients with non-MCH providers must be approved in advance by the Texas Department of Health, Immunization Division. To obtain vaccine or submit specimens for testing, call (800)252-9152.

Invasive *Haemophilus influenzae* type b

CLINICAL CASE DEFINITION: Invasive disease due to *Haemophilus influenzae* may produce any of several clinical syndromes, including meningitis, bacteremia (septicemia), epiglottitis, pericarditis, osteomyelitis, septic arthritis, and cellulitis.

REPORTING: Report immediately to a local or regional health department at **(800) 705-8868** or the Texas Department of Health (TDH), Immunization Division at **(800) 252-9152**. Conjunctivitis, otitis media, and bronchitis caused by *H. influenzae* are not invasive infections, and do not need to be reported.

INVESTIGATION FORM: A completed case track record must be submitted by local health department on all suspected cases to the TDH Immunization Division within 30 days of initial report. In the event of death, please provide copies of the hospital discharge summary, death certificate, and autopsy report.

CASE CLASSIFICATIONS:

- **Confirmed:** A clinically compatible case that is culture confirmed
- **Probable:** A clinically compatible illness with detection of *Haemophilus influenzae* type b antigen in cerebrospinal fluid (CSF). Antigen test results in urine or serum are unreliable for diagnosis of *H. influenzae* disease.

LABORATORY CONFIRMATION:

- Isolation of *H. influenzae* from a normally sterile site (blood, CSF, joint fluid, or pericardial fluid).
- All *H. influenzae* isolates from sterile sites should be serotyped.

CONTROL MEASURES:

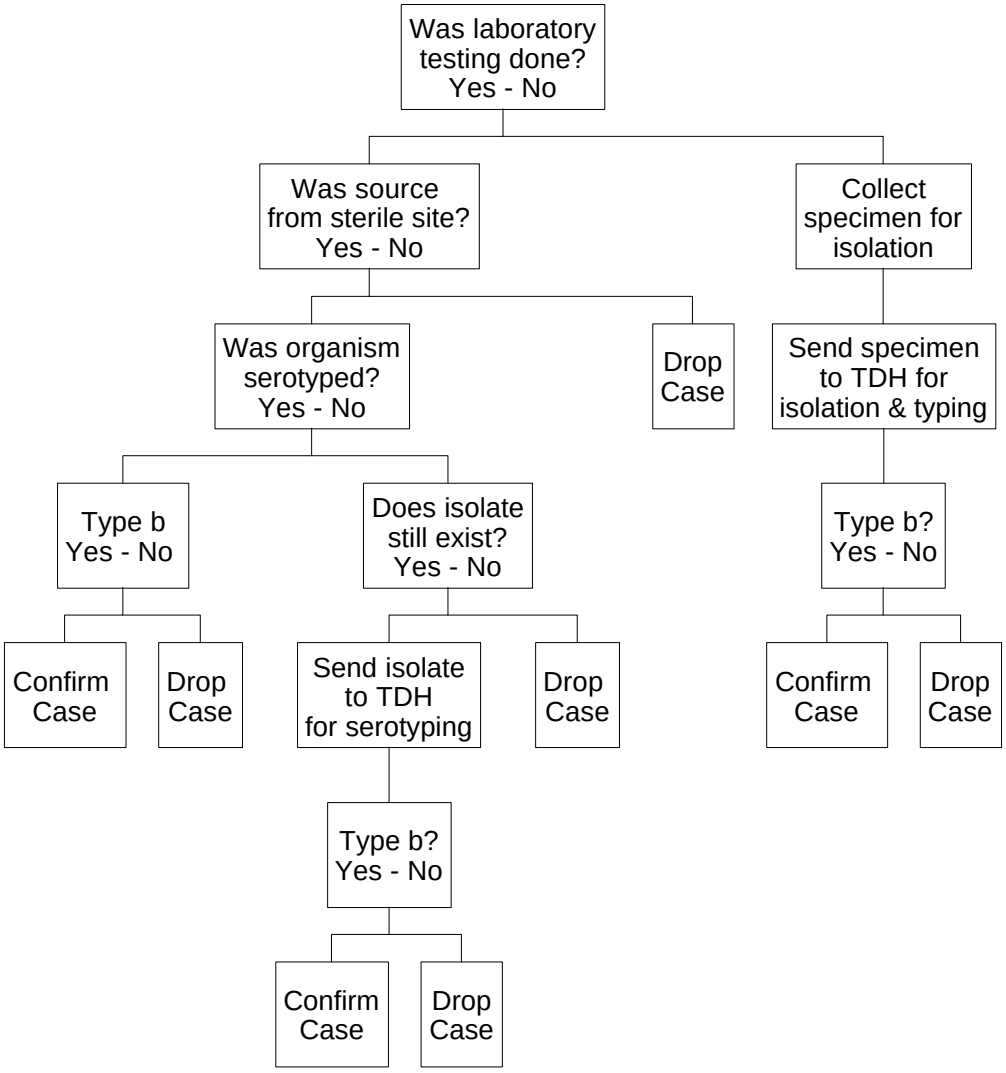
- Reports of invasive Hib disease in children <5 years of age should be investigated **immediately**.
- Identify all exposed contacts <5 years of age.
- In households with one or more infants <12 months of age (regardless of vaccination status) or with a child 1-3 years of age who is inadequately vaccinated, all household contacts should receive rifampin prophylaxis following a case of invasive Hib disease that occurs in any household member.
- If a case of Hib disease occurs in a day-care facility, and a child <2 years of age has been exposed, all parents should be notified. All students and staff in the classroom where this case occurred should receive rifampin prophylaxis; however, rifampin is not necessary if **ALL** children <4 years of age are fully vaccinated.
- Hospital personnel exposed to a child with invasive Hib disease do not need prophylaxis.
- The recommended dose of rifampin is 20 mg/kg as a single daily dose (maximum daily dose 600 mg) for 4 days. Neonates (<1 month of age) should receive 10 mg/kg once daily for 4 days.
- Rifampin prophylaxis should be instituted as rapidly as possible.
- The index patient should also receive rifampin prophylaxis preferably just before hospital discharge.
- Children <24 months of age who have had invasive Hib disease (culture confirmed) should still receive Hib vaccine, since many children of that age fail to develop adequate immunity following natural disease.

SPECIFIC LABORATORY PROCEDURES: Serotyping of *H. influenzae* isolates is important in determining which cases are vaccine preventable. **DO NOT** submit isolates from sputum for serotyping.

- Submit isolates of *H. influenzae* on chocolate agar slants (or media that has the necessary growth requirements for *Haemophilus*.
- If a delay in transport is anticipated, use a CO_2 generator bag.
- Use Specimen Submission form G-1
- Ship specimen to the TDH laboratory via overnight delivery. The viability of the organism is short lived, therefore, isolate must arrive at the TDH lab in Austin within two (2) days after collection
- **Mail specimens to:**

  Bacteriology
  Bureau of Laboratories
  Texas Department of Health
  1100 West 49th Street
  Austin, TX 78756

Haemophilus influenzae type b: Laboratory Testing and Interpretation



Measles

CLINICAL CASE DEFINITION: An illness characterized by the following:

- a generalized rash lasting at least 3 days
- temperature ≥ 101°F
- cough, coryza, or conjunctivitis

REPORTING: Report immediately to a local or regional health department at **(800) 705-8868** or the Texas Department of Health (TDH), Immunization Division at **(800) 252-9152**.

INVESTIGATION FORM: A completed case track record must be submitted by local health department on all suspected cases to the TDH Immunization Division within 30 days of initial report. In the event of death, please provide copies of the hospital discharge summary, death certificate, and autopsy report.

CASE CLASSIFICATIONS:

- **Confirmed:** A case that is laboratory confirmed, or meets the clinical case definition AND is epidemiologically linked to a confirmed or probable case.
- **Probable:** Meets the clinical case definition, has no or noncontributory serologic or virologic testing, AND is not epidemiologically linked to a probable or confirmed case.
- **Suspect:** Any rash illness with fever.

LABORATORY CONFIRMATION:

- Positive serologic test for measles-specific IgM antibody **(preferred)**, or
- Significant rise in measles antibody by any standard serologic assay (i.e four-fold rise in IgG antibody from acute to convalescent samples), or
- Isolation of measles virus from a clinical specimen.

CONTROL MEASURES:

- Reports of suspected measles should be investigated **immediately**.
- Treat all cases as confirmed until laboratory testing or other information rules out measles.
- Identify all exposed contacts.
- Susceptible contacts to suspected cases should be vaccinated with measles vaccine within 72 hours of exposure OR should be administered immune globulin within six (6) days of exposure.
- Children ≥1 year and <4 years should have history of at least one (1) dose of MMR vaccine.
- Persons ≥4 years and born after 1956 should have history of two (2) doses of MMR vaccine.
- If vaccination of exposed contact is contraindicated, exclude exposed contact from school or day-care for at least 14 days after last rash onset.
- Persons who cannot readily provide documentation of measles immunity should be vaccinated or excluded from the setting (e.g., school, day-care facility, work place).

EXCLUSION: Four (4) days from rash onset. In outbreak, unvaccinated children should be excluded for at least 14 days after last rash onset.

SPECIFIC LABORATORY PROCEDURES: IgM preferred

IgM: Single specimen collected early in the course of illness--can be done on day of rash onset to 30 days after rash onset, **OR**

IgG: Acute AND convalescent samples. Collect acute early in course of illness and convalescent 10-14 days later.

- P Collect a minimum of 5 mL of blood in a red-top tube or any collection tube without anticoagulant.
- P Separate serum from blood and store serum in sterile container at 2-8°C. Freeze serum if there will be more than three (3) days between collection and receipt in lab. Whole blood may be sent if specimen is shipped on day of collection. **Do not freeze whole blood**.
- P Label blood tubes or serum containers with the patient's name and date of birth or social security number
- P Use Specimen Submission Form G-1. Make sure the patient's name and date of birth/ social security number match exactly what is written on the tube. Mark the laboratory test requested, date of onset, and date of collection. Be certain that the names on acute and convalescent sera match exactly.
- P Send serum to the TDH laboratory via overnight delivery (preferred) OR on cold packs.
- P **Mail specimens to:**

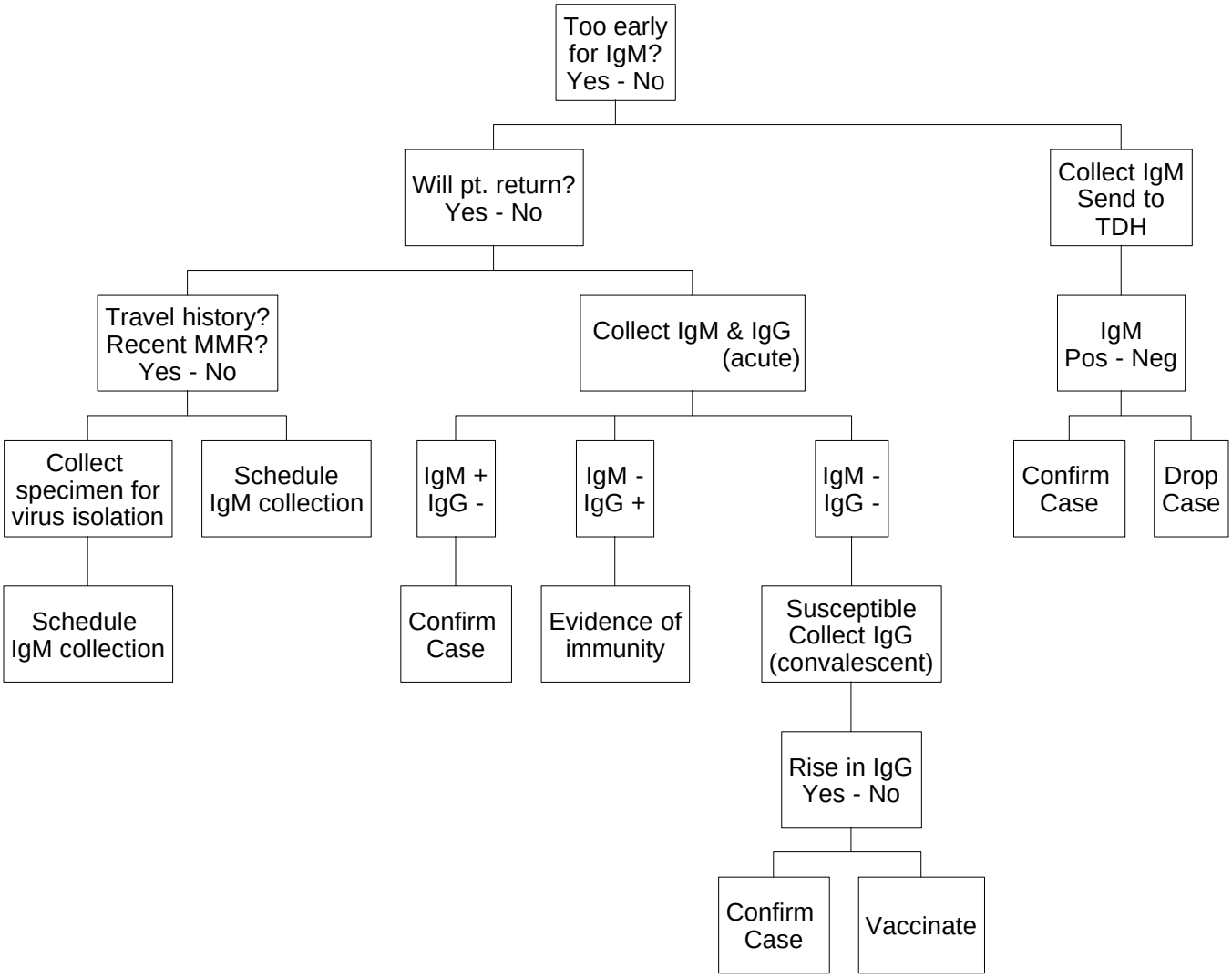
  Medical Serology
  Bureau of Laboratories
  Texas Department of Health
  1100 West 49th Street
  Austin, TX 78756

Virus Isolation: The diagnosis of measles should be based on detection of measles-specific IgM antibody in serum. However, if case has received a measles-containing vaccine in the last three months, specimens for virus isolation should be obtained to differentiate between wild and vaccine strains. Molecular epidemiologic techniques are also used to genetically type measles viruses and identify the source of wild viruses.

- P Collect 50-100 mL of urine, first morning voided urine ideal, or
- P Specimens should be collected within four (4) days of rash onset.
- P Keep specimens at 4°C.
- P Use Specimen Submission Form G-1. Make sure the patient's name and date of birth/ social security number match exactly what is written on the specimen. Mark the laboratory test requested (virus isolation-measles), disease suspected, date of onset, and date of collection.
- P Ship specimen via overnight delivery on wet ice within 48 hours of collection.
- P **Mail Specimens To:**

  Virology
  Bureau of Laboratories
  Texas Department of Health
  1100 West 49th Street
  Austin, TX 78756

Measles:
Laboratory Testing and Interpretation



Mumps

CLINICAL CASE DEFINITION: An illness with acute onset of unilateral or bilateral tender, self-limited swelling of the parotid or other salivary gland, lasting ≥ 2 days, and without other apparent cause (as reported by a health professional)

- Parotitis can be caused by influenza, parainfluenza type 3, and cytomegaloviruses (CMV). There are also numerous other non-infectious causes of parotid swelling. Approximately 30% of sporadic parotitis is NOT caused by mumps virus, and 20%-40% of mumps cases may not have parotid swelling. Mumps can be confirmed only through mumps-specific laboratory testing.

REPORTING: Report immediately to a local or regional health department at **(800) 705-8868** or the Texas Department of Health (TDH), Immunization Division at **(800) 252-9152**.

INVESTIGATION FORM: A completed case track record must be submitted by local health department on all suspected cases to the TDH Immunization Division within 30 days of initial report. In the event of death, please provide copies of the hospital discharge summary, death certificate, and autopsy report.

CASE CLASSIFICATIONS:

- **Confirmed:** a case that is laboratory confirmed OR that meets the clinical case definition AND is epidemiologically linked to a confirmed or probable case. A laboratory-confirmed case does not need to meet the clinical case definition.

- **Probable:** a case that meets the clinical case definition, has no serologic or virologic testing, AND is not epidemiologically linked to a confirmed or probable case.

Two probable cases that are epidemiologically linked are considered confirmed, even in the absence of laboratory confirmation.

LABORATORY CONFIRMATION:

- Positive serologic test for mumps IgM antibody **(preferred)**, or
- Significant rise in mumps antibody level by any standard serologic assay, or
- Isolation of mumps virus from a clinical specimen
- An elevated serum amylase is not confirmatory for mumps

CONTROL MEASURES:

- Although vaccination after exposure to mumps may not prevent disease, the vaccine would protect persons from subsequent exposures, therefore, susceptible contacts should be vaccinated.
- Persons who are unsure of their mumps disease history or mumps vaccination history should be vaccinated.
- IG is not effective and not recommended.

EXCLUSION: Nine (9) days after onset of swelling

SPECIFIC LABORATORY PROCEDURES:

IgM: Single specimen collected ≥ 3 days following onset of symptoms--can be collected up to 30 days after parotid swelling, **OR**

IgG: Acute AND convalescent samples. Collect acute early in course of illness and convalescent 10-14 days later.

- Collect a minimum of 5 mL of blood in a red-top tube or any collection tube without anticoagulant.
- Separate serum from blood and store serum in sterile container at 2-8°C . Freeze serum if there will be more than three (3) days between collection and receipt in lab. Whole blood may be sent if specimen is shipped on day of collection. **Do not freeze whole blood**.
- Label blood tubes or serum containers with the patient's name and date of birth or social security number
- Use Specimen Submission Form G-1. Make sure the patient's name and date of birth/ social security number match exactly what is written on the tube. Mark the laboratory test requested, date of onset, and date of collection.
- Send serum to the TDH laboratory via overnight delivery (preferred) OR on cold packs.
- **Mail specimens to:**

  Medical Serology
  Bureau of Laboratories
  Texas Department of Health
  1100 West 49th Street
  Austin, TX 78756

Virus Isolation: Specimens should be obtained early in the course of illness when the quantity of virus shed is highest. Respiratory specimens (nasopharyngeal swab, Stensen's duct swab, or nasal aspirate) are preferred, although references indicate that mumps virus can be isolated from blood, urine, and cerebrospinal fluid.

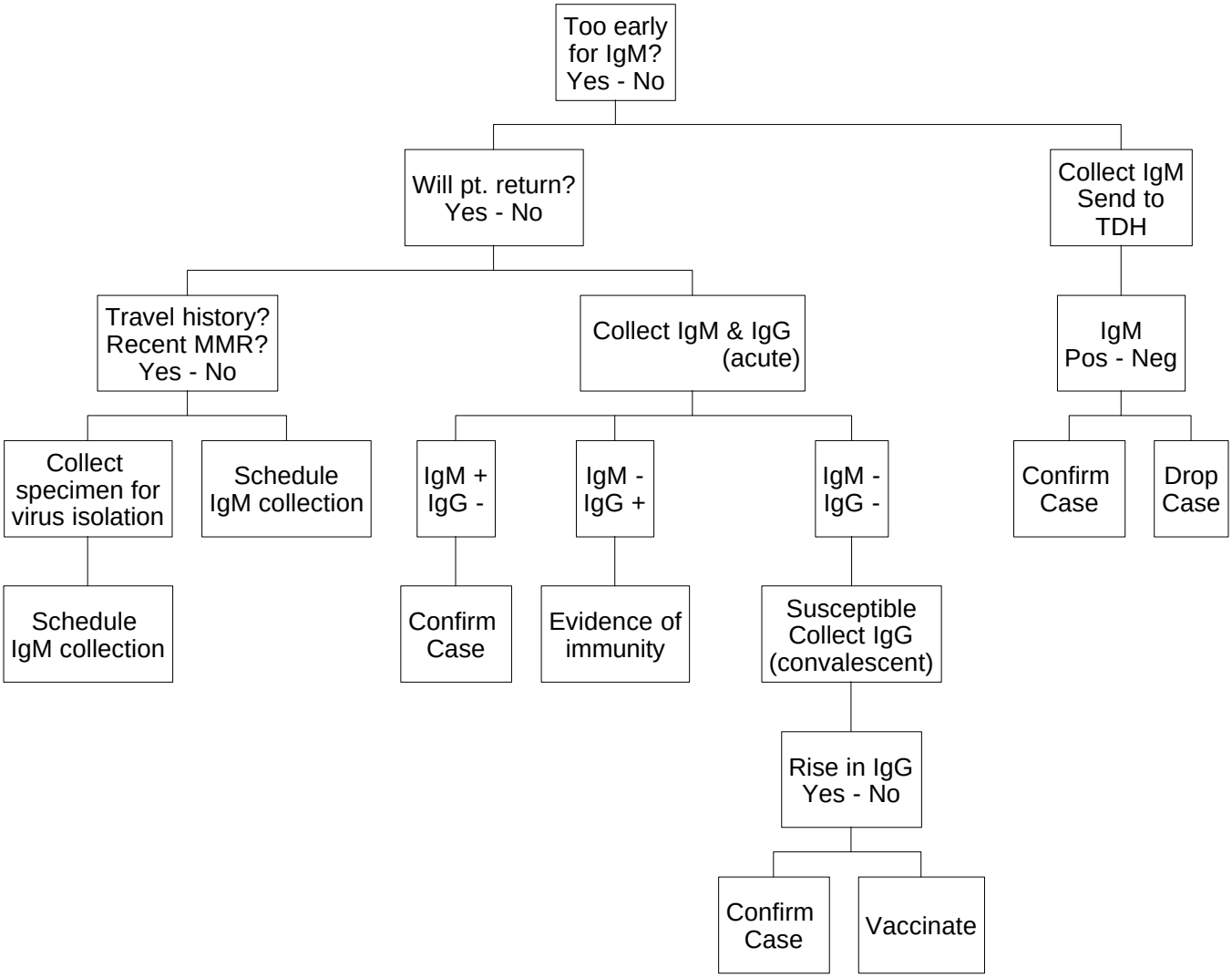
- **Nasopharyngeal swab and Stensen's duct specimens:** The oropharynx or Stensen's duct should be rubbed vigorously with the swab to scrape off mucosal cells. The swab should then be agitated for at least 30 seconds in 2-4 mL of viral transport media, e.g., cold veal infusion broth. A viral culturette may also be used.
- **Nasal Aspirates:** Obtain nasal specimen with a sterile rubber bulb aspirator. The aspirate should be discharged into a small sterile container.
- **Urine:** Urine specimens should be collected aseptically in a sterile container; up to 45 mL placed in a sterile 50 mL centrifuge tube.

All clinical specimens for virus isolation should be kept at 4°C during storage and shipment. Ship specimens on ice via overnight delivery.

- **Mail specimens to:**

  Virology
  Bureau of Laboratories
  Texas Department of Health
  1100 West 49th Street
  Austin, TX 78756

Mumps:
Laboratory Testing and Interpretation



Pertussis

CLINICAL CASE DEFINITION: For endemic or sporadic cases, a cough illness lasting at least two (2) weeks with one of the following without other apparent cause (as reported by a health professional):

- paroxysms of coughing
- inspiratory whoop
- post-tussive vomiting

OUTBREAK SETTINGS: In outbreak settings, including household exposures, case definition used can be modified to a "cough illness lasting at least 14 days (as reported by a health professional)."

REPORTING: Report immediately to a local or regional health department at **(800) 705-8868** or the Texas Department of Health (TDH), Immunization Division at **(800) 252-9152**.

INVESTIGATION FORM: A completed case track record must be submitted by local health department on all suspected cases to the TDH Immunization Division within 30 days of initial report. In the event of death, please provide copies of the hospital discharge summary, death certificate, and autopsy report.

CASE CLASSIFICATIONS:

- **Confirmed:** A person with an acute cough illness of any duration who is culture positive, or a case that meets the clinical case definition and is epidemiologically linked directly to a case culture confirmed.
- **Probable:** Meets the clinical case definition, is not laboratory confirmed, and is not epidemiologically linked to a laboratory-confirmed case.

LABORATORY CONFIRMATION:

- Isolation of *Bordetella pertussis* from a clinical specimen, or
- Positive polymerase chain reaction (PCR) assay for *Bordetella pertussis*

CONTROL MEASURES:

- Reports of suspected pertussis should be investigated promptly.
- Identify all exposed contacts.
- Erythromycin prophylaxis (40-50 mg/kg/d, orally in four divided doses; maximum, 2g/d) for 14 days, as tolerated, is recommended for all household contacts and other close contacts, such as those in child care, **irrespective of vaccination status**. For those who cannot tolerate erythromycin, trimethoprim-sulfamethoxazole is an alternative.
- Local and regional immunization programs should furnish erythromycin if individuals are unable to purchase the antibiotic on their own.
- Exposed children should be observed for 14 days after last contact with the exposed person.
- Close contacts younger than seven (7) years who are unvaccinated or who have fewer than four (4) doses of DTP vaccine should be vaccinated according to the recommended schedule. Children who received their third dose of DTP vaccine six (6) months or more before exposure should be given a fourth dose at this time. Those who have had at least four (4) doses of DTP should receive a booster dose of DTP or DTaP unless a dose has been given within the last three (3) years or they are seven (7) years of age or older.

EXCLUSION: Until completion of five (5) days of antibiotic therapy.

SPECIFIC LABORATORY PROCEDURES: Isolation of the organism by culture is preferred. Direct fluorescent antibody (DFA) testing of nasopharyngeal secretions has been shown to have low sensitivity and variable specificity, therefore, it **should only** be used for screening and **not** relied on for laboratory confirmation. To obtain Regan-Lowe transport media kits or direct fluorescent antibody (DFA) kits, contact the TDH Bureau of Laboratories, Bacteriology Division, at **(512) 458-7661**.

Pertussis Culture:

- Collect a nasopharyngeal specimen from each nostril with either a thin-wire calcium alginate or Dacron swab. If resistance is met in both nasal passageways, enter the nasopharyngeal area through the mouth.
- Use Regan-Lowe (RL) transport media (shelf-life of three months). DO NOT USE MEDIA AFTER THE EXPIRATION DATE PRINTED ON THE TUBE.
- Roll the two swab specimens across the **slanted** surface of one RL transport slant. Place the two swabs into one RL transport deep, pushing swab down into the medium. Cut off the shaft of the swabs at the top of the tube. Replace cap.
- If there is a delay of more than two (2) hours between collection and shipment, then refrigerate specimens.
- Ship specimens via overnight delivery on cold packs or wet ice within 48 hours of collection
- Use Specimen Submission Form G-1. Make sure the patient's name and date of birth/ social security number match exactly what is written on the transport tubes. Mark the laboratory test requested, date of onset, and date of collection.
- Culture examination of specimens takes a minimum of ten (10) days for completion of a negative specimen.
- **Mail specimens to:**

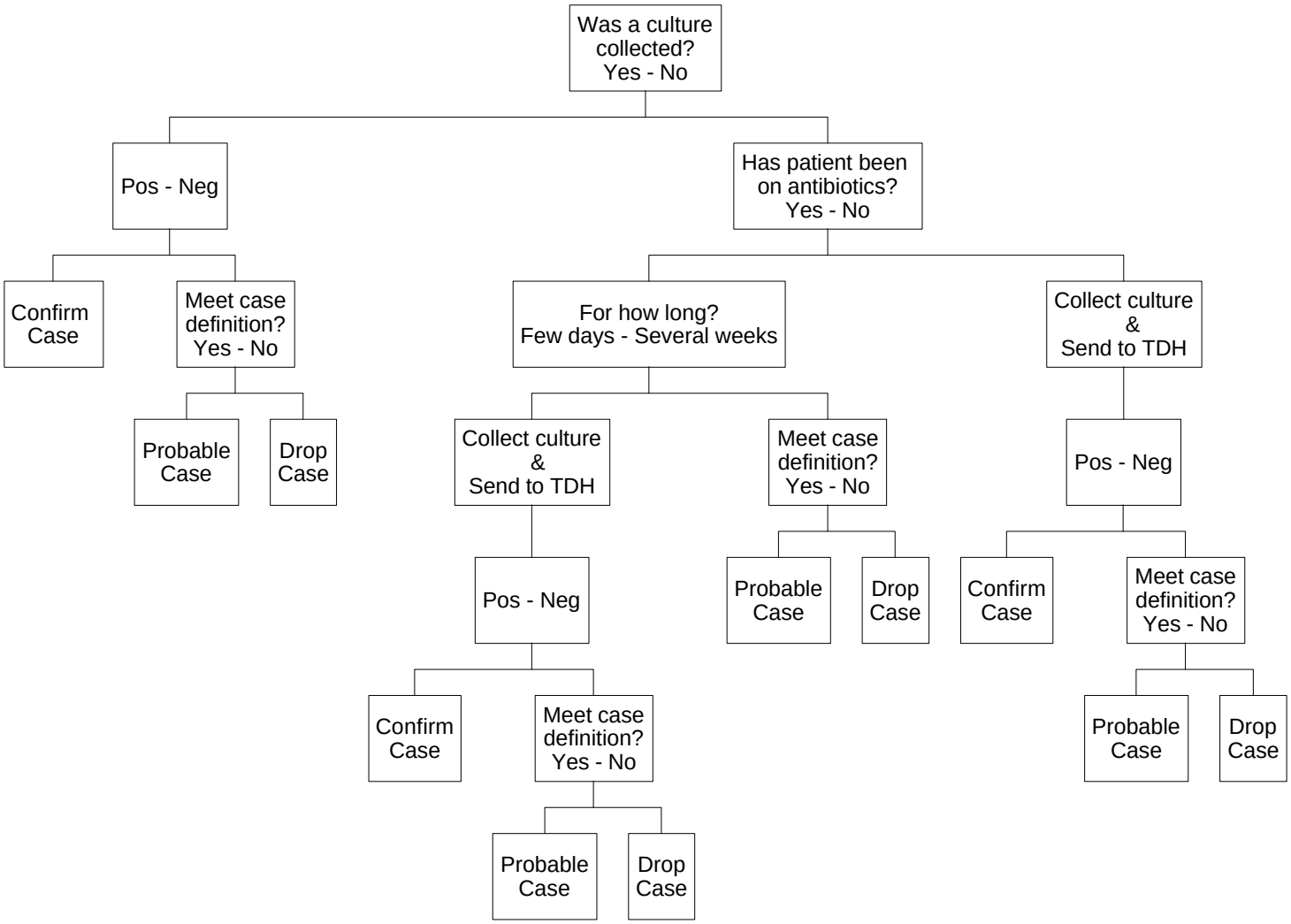
  Bacteriology
  Bureau of Laboratories
  Texas Department of Health
  1100 West 49th Street
  Austin, TX 78756

Direct Florescent Antibody:

- Collect a nasopharyngeal specimen from each nostril with either a thin-wire calcium alginate or Dacron swab. If resistance is met in both nasal passageways, enter the nasopharyngeal area through the mouth.
- Using a plastic transfer pipe, transfer one drop of sterile distilled water to each circle of the fluorescent antibody (FA) slide.
- The specimen taken from one nostril is applied to one circle on the slide. Swirl the swab in the drop of fluid to mix well. Repeat this procedure using the swab from the other nostril. The second specimen is transferred to the second circle of the same slide.
- Use Specimen Submission Form G-1. Make sure the patient's name and date of birth/ social security number match exactly what is written on the slides. Mark the laboratory test requested, date of onset, and date of collection.
- **Mail specimens to:**

  Bacteriology
  Bureau of Laboratories
  Texas Department of Health
  1100 West 49th Street
  Austin, TX 78756

Pertussis:
Laboratory Testing and Interpretation



Paralytic Poliomyelitis

CLINICAL CASE DEFINITION: Acute onset of a flaccid paralysis of one or more limbs with decreased or absent tendon reflexes in the affected limbs, without other apparent cause, and without sensory or cognitive loss (as reported by a physician).

REPORTING: Report immediately to a local or regional health department at **(800) 705-8868** or the Texas Department of Health (TDH), Immunization Division at **(800) 252-9152**.

INVESTIGATION FORM: There is no specific case-investigation form, however, a detailed written report will be required by local health department if suspected case is eventually confirmed. In the event of death, please provide copies of the hospital discharge summary, death certificate, and autopsy report.

CASE CLASSIFICATIONS:

- **Confirmed:** A case that meets the clinical case definition and in which the patient has a neurologic deficit 60 days after onset of initial symptoms, has died, or has unknown follow-up status.
- **Probable:** A case that meets the clinical case definition.

All suspected cases of paralytic poliomyelitis are reviewed by a panel of expert consultants at the national Centers for Disease Control and Prevention before final case classification occurs.

LABORATORY CONFIRMATION:

- Isolation of poliovirus type 1, 2, or 3 from a clinical specimen (stool or CSF)

SPECIMEN COLLECTION

- 5 gram specimen of stool (transport media not needed for stool)
- 1 mL of CSF; freeze at 15° to -20°C and ship on dry ice

INVESTIGATION OF SUSPECTED CASES (collect the following information)

- Demographic data (name, age, sex, race, complete address, and occupation of patient)
- Complete immunization history (the number, dates, and lot numbers of all previous doses of vaccine)
- Clinical information (include the course of illness and sites of paralysis and any complications)
- Immunologic status (if any doubt exists about the patient's status, an immunologic evaluation of quantitative immunoglobulins, T and B cell quantification, lymphocyte transformation, etc. should be considered)
- Exposure history
  - recent travel of patient or a close contact outside of the US
  - contact with any known case of poliomyelitis
  - contact within previous 30 days with any person who received OPV within the last 60 days (include date of contact, nature of contact, date contact received OPV, lot number of vaccine, age of contact, and relationship to patient)
- Obtain copy of hospital discharge summary
- Obtain copy of 60-day follow-up report to ascertain if there is any residual paralysis
- If patient died, obtain copy of autopsy report or death summary

Poliovirus Isolates

It is not uncommon for a poliovirus to be identified in a clinical specimen from an infant or young child who has recently received a dose of OPV. If you receive a laboratory report indicating that a poliovirus has been identified, obtain the following information on the patient:

- Complete immunization history (the number, dates, and lot numbers of all previous doses of OPV and IPV vaccine)
- Clinical history (were there any clinical signs of paralytic poliomyelitis?)
- Diagnosis

If there was no suspicion of paralytic poliomyelitis, no further action is needed. If the patient is suspected of having paralytic poliomyelitis, investigate case according to paralytic poliomyelitis guidelines.

Rubella

CLINICAL CASE DEFINITION: An illness characterized by acute onset of generalized maculopapular rash; a temperature $\geq$ 99° F, if measured; arthralgia/arthritis, lymphadenopathy, or conjunctivitis. **Fifty percent of infected persons do not have symptoms**.

REPORTING: Report immediately to a local or regional health department at **(800) 705-8868** or the Texas Department of Health (TDH), Immunization Division at **(800) 252-9152**.

INVESTIGATION FORM: A completed case track record must be submitted by local health department on all suspected cases to the TDH Immunization Division within 30 days of initial report. In the event of death, please provide copies of the hospital discharge summary, death certificate, and autopsy report.

CASE CLASSIFICATIONS:

- **Confirmed:** A case that is laboratory confirmed, or meets the clinical case definition and is epidemiologically linked to a laboratory-confirmed case.
- **Probable:** Meets the clinical case definition, has no or noncontributory serologic or virologic testing, and is not epidemiologically linked to a probable or confirmed case.
- **Suspect:** Any generalized rash illness of acute onset.

LABORATORY CONFIRMATION:

- Positive serologic test for rubella-specific IgM antibody **(preferred)**, or
- Significant rise in rubella antibody by any standard serologic assay (i.e four-fold rise in IgG antibody from acute to convalescent samples), or
- Isolation of rubella virus from a clinical specimen.

CONTROL MEASURES:

- All reports of suspected rubella should be investigated promptly. Treat all cases as confirmed until laboratory testing or other information rules out rubella.
- Identify all exposed contacts.
- Determine vaccine status of exposed contacts. If not up-to-date with vaccination, vaccinate with MMR according to the recommended immunization schedule.
- Persons $\geq$ 1 year should have history of one (1) dose of MMR or serologic evidence of immunity to rubella.
- Persons who cannot readily provide laboratory evidence of rubella or a documented history of vaccination on or after their first birthday should be considered susceptible and should be vaccinated if there are no contraindications.
- If vaccination of exposed contact is contraindicated, exclude exposed contact from school or day-care for at least three (3) weeks after last rash onset.
- If a pregnant woman is exposed to rubella, evidence of rubella immunity should be obtained as soon as possible. If no rubella antibody is detectable, a blood specimen should be obtained 3-4 weeks after exposure and tested for rubella antibody. If antibody is present, infection is assumed to have occurred.

EXCLUSION: Seven (7) days after onset of rash. In an outbreak, unvaccinated children and pregnant women should be excluded for at least three weeks after rash onset.

SPECIFIC LABORATORY PROCEDURES: IgM is preferred.

IgM: Single specimen collected early in the course of illness--preferably five (5) days after rash onset. Because rubella IgM antibodies rise more slowly than measles IgM antibodies, a negative rubella IgM result on a specimen collected within 5 days of rash onset will NOT rule out a diagnosis of rubella. In this situation another specimen should be collected and tested.

IgG: Acute AND convalescent samples required. Collect acute early in course of illness and convalescent 10-14 days later. Evidence of rubella immunity by measuring IgG antibody (e.g. in an exposed pregnant woman) can be determined with a single blood specimen.

- Collect a minimum of 5 mL of blood in a red-top tube or any collection tube without anticoagulant.
- Separate serum from blood and store serum in sterile container at 2-8°C. Freeze serum if there will be more than three (3) days between collection and receipt in lab. Whole blood may be sent if specimen is shipped on day of collection. **Do not freeze whole blood**.
- Label blood tubes or serum containers with the patient's name and date of birth or social security number
- Use Specimen Submission Form G-1. Make sure the patient's name and date of birth/ social security number match exactly what is written on the tube. Mark the laboratory test requested, date of onset, and date of collection. Be certain that the names on acute and convalescent sera match exactly.
- Send serum to the TDH laboratory via overnight delivery (preferred) OR on cold packs.
- **Mail specimens to:**

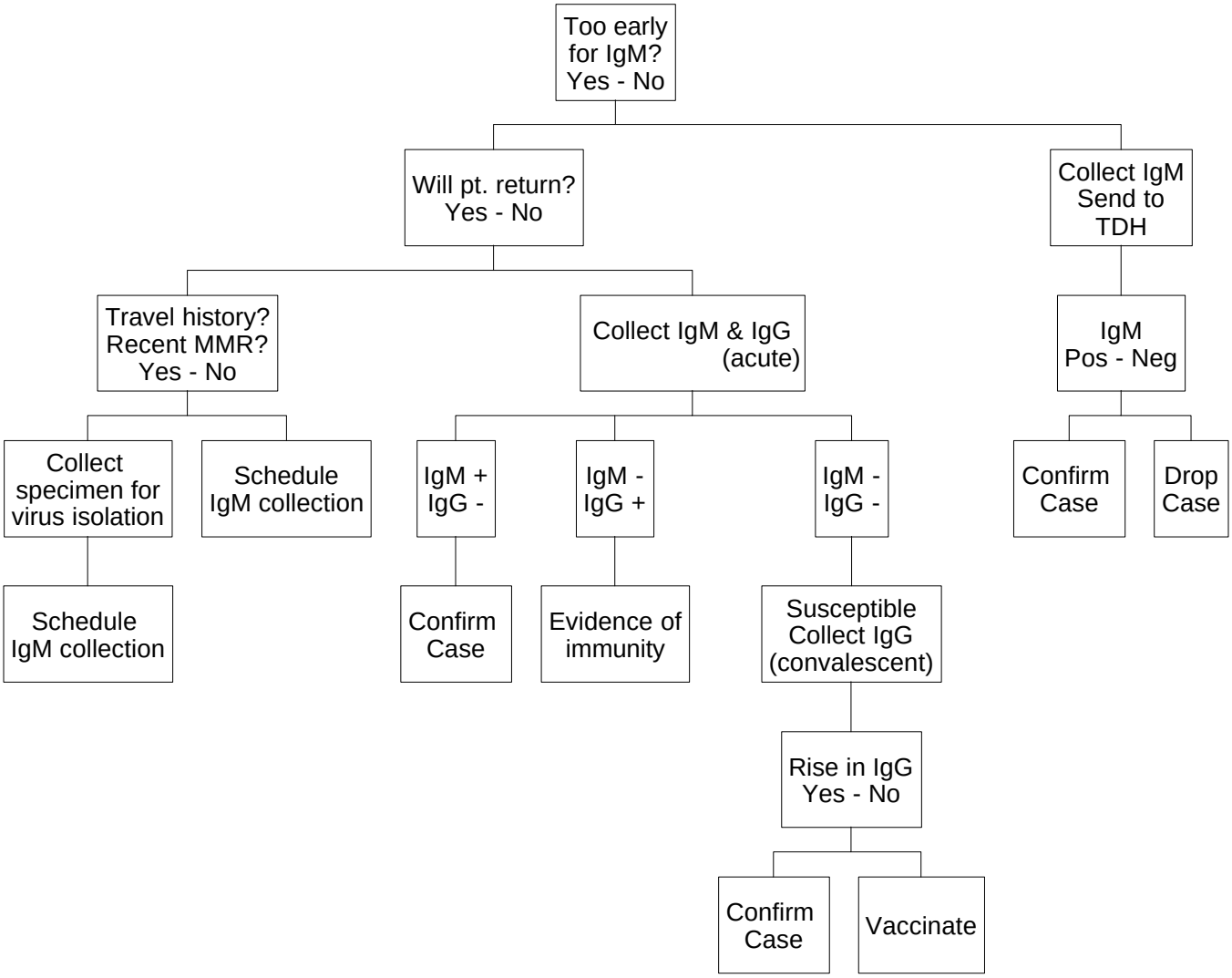
  Medical Serology
  Bureau of Laboratories
  Texas Department of Health
  1100 West 49th Street
  Austin, TX 78756

Virus Isolation:
Rubella virus isolates can be useful in diagnosis of acute rubella and CRS, and are needed to establish the molecular epidemiology of rubella. To submit a specimen to the TDH laboratory for rubella viral isolation:

- Use a viral culturette (collection and transport system).
- Obtain a pharyngeal swab within 4 days of rash onset.
- Label the culturette with the patient's name and date of birth or social security number.
- Keep the specimen at 4°C and ship overnight on wet ice within 48 hours.
- If the specimen must be held longer, freeze it at -70°C and ship it on dry ice.
- Use Specimen Submission Form G-1. Make sure the patient's name and date of birth/ social security number match exactly what is written on the culturette. Mark the laboratory test requested (virus isolation-rubella), disease suspected, date of onset, and date of collection.
- Send the specimen to the laboratory via overnight delivery on wet or dry ice as noted above.
- **Mail Specimens To:**

  Virology
  Bureau of Laboratories
  Texas Department of Health
  1100 West 49th Street
  Austin, TX 78756

Rubella:
Laboratory Testing and Interpretation



Congenital Rubella Syndrome (CRS)

CLINICAL CASE DEFINITION: An illness of newborns resulting from rubella infection *in utero* and characterized by signs or symptoms from the following categories:

(A) Cataracts/congenital glaucoma, congenital heart disease (most commonly patent ductus arteriosus, peripheral pulmonary artery stenosis), hearing loss, pigmentary retinopathy.

(B) Purpura, splenomegaly, jaundice, microcephaly, mental retardation, meningoencephalitis, radiolucent bone disease.

REPORTING: Report immediately to a local or regional health department at **(800) 705-8868** or the Texas Department of Health (TDH), Immunization Division at **(800) 252-9152**.

INVESTIGATION FORM: A completed case track record must be submitted by local health department on all suspected cases to the TDH Immunization Division within 30 days of initial report. In the event of death, please provide copies of the hospital discharge summary, death certificate, and autopsy report.

CASE CLASSIFICATIONS:

- **Confirmed:** A clinically compatible case that is laboratory confirmed.
- **Probable:** A case that is not laboratory confirmed and that has any two complications listed in **(A)** above, or one complication from **(A)** and one from **(B)** and lacking evidence of any other etiology.
- **Possible:** A case with some compatible clinical findings but not meeting the criteria for a probable case.
- **Infection only:** A case with laboratory evidence of infection, but without any clinical signs or symptoms.

LABORATORY CONFIRMATION:

- Isolation of the rubella virus
- Serologic evidence of rubella-specific IgM antibody, or
- An infant's rubella antibody level that persists above and beyond that expected from passive transfer of maternal antibody (i.e., rubella titer that does not drop at the expected rate of a two-fold dilution per month)

CONTROL MEASURES:

- All reports of suspected congenital rubella syndrome should be investigated promptly.
- Identify all exposed contacts and determine their susceptibility to rubella.
- Patients with congenital rubella syndrome should be considered contagious until they are one (1) year of age, unless nasopharyngeal and urine cultures are negative for rubella.
- Mothers should be made aware of the potential hazard of their infants to susceptible, pregnant contacts.

EXCLUSION: Infants with CRS should be placed in contact isolation. These precautions should be enforced during any hospital admission before the child's first birthday, unless pharyngeal and urine cultures are negative for virus after age 3 months.

SPECIFIC LABORATORY PROCEDURES:

IgM: Single specimen collected soon after birth or soon after suspected diagnosis of CRS is made.

- Collect a minimum of 5 mL of blood in a red-top tube or any collection tube without anticoagulant.
- Separate serum from blood and store serum in sterile container at 2-8°C. Freeze serum if there will be more than three (3) days between collection and receipt in lab. Whole blood may be sent if specimen is shipped on day of collection. **Do not freeze whole blood**.
- Label blood tubes or serum containers with the patient's name and date of birth or social security number
- Use Specimen Submission Form G-1. Make sure the patient's name and date of birth/ social security number match exactly what is written on the tube. Mark the laboratory test requested, date of onset, and date of collection. Be certain that the names on acute and convalescent sera match exactly.
- Send serum to the TDH laboratory via overnight delivery (preferred) OR on cold packs.
- **Mail specimens to:**

  Medical Serology
  Bureau of Laboratories
  Texas Department of Health
  1100 West 49th Street
  Austin, TX 78756

Virus Isolation: Rubella virus can be isolated from throat, nasal, blood, urine, and cerebrospinal fluid specimens from rubella and CRS cases. Efforts should be made to obtain clinical specimens (particularly pharyngeal swabs) for viral isolation from infants at the time of the initial investigation. However, infants with CRS may shed virus for a prolonged period so specimens obtained later may also yield rubella virus. Specimens for virus isolation (pharyngeal swabs) should be obtained monthly until cultures are repeatedly negative.

- Use a viral culturette (collection and transport system) to obtain a pharyngeal swab.
- Label the culturette with the patient's name and date of birth or social security number.
- Keep the specimen at 4°C and ship overnight on wet ice within 48 hours.
- If the specimen must be held longer, freeze it at -70°C and ship it on dry ice.
- Use Specimen Submission Form G-1. Make sure the patient's name and date of birth/ social security number match exactly what is written on the culturette. Mark the laboratory test requested (virus isolation-rubella), disease suspected, date of onset, and date of collection.
- Send the specimen to the laboratory via overnight delivery on wet or dry ice as noted above.
- **Mail Specimens To:**

  Virology
  Bureau of Laboratories
  Texas Department of Health
  1100 West 49th Street
  Austin, TX 78756

Tetanus

CLINICAL CASE DEFINITION: Acute onset of hypertonia and/or painful muscular contractions (usually of the muscles of the jaw and neck) and generalized muscle spasms without other apparent medical cause (as reported by a health professional).

REPORTING: Report immediately to a local or regional health department at **(800) 705-8868** or the Texas Department of Health (TDH), Immunization Division at **(800) 252-9152**.

INVESTIGATION FORM: A completed case track record must be submitted by local health department on all suspected cases to the TDH Immunization Division within 30 days of initial report. In the event of death, please provide copies of the hospital discharge summary, death certificate, and autopsy report.

CASE CLASSIFICATION:

P **Confirmed:** A case that meets the clinical case definition

LABORATORY CONFIRMATION: None

CONTROL MEASURES: None (tetanus is not directly transmitted from person to person).

P The best method for controlling tetanus is preventing tetanus through active immunization with adsorbed tetanus toxoid; combined tetanus-diphtheria toxoid is recommended.

P Tetanus toxoid is recommended for universal use regardless of age, especially for persons employed in occupations which put them in contact with soil, sewage, or domestic animals; military personnel, policemen, firefighters, and others with greater than usual risk of traumatic injury; the elderly; and international travelers.

Varicella (Chickenpox)

CLINICAL CASE DEFINITION: An illness with acute onset of diffuse (generalized) papulovesicular rash without other apparent cause (as reported by a health professional)

REPORTING: Report weekly by age to a local or regional health department at **(800) 705-8868** or the Texas Department of Health (TDH), Immunization Division at **(800) 252-9152**. Chickenpox reporting pads are available from the Texas Department of Health.

INVESTIGATION FORM: ***None***. In the event of death, please provide copies of the hospital discharge summary, death certificate, and autopsy report.

CASE CLASSIFICATION:

P **Confirmed:** A case that is laboratory confirmed or that meets the clinical case definition.

LABORATORY CONFIRMATION: None required

CONTROL MEASURES:

P **Pregnant woman:**
Evidence of varicella immunity should be obtained as soon as possible. If no varicella antibody is detectable, Varicella-zoster immune globulin (VZIG) given within 96 hours of exposure may prevent or modify disease in susceptible close contacts of cases. VZIG is indicated for newborns of mothers who develop chickenpox within 5 days prior to delivery or within 48 hours after delivery. There is no evidence that administration of VZIG to a pregnant woman will prevent fetal infections.

P **Health care setting:**
Health care workers should ensure they are immune to varicella either through a reliable history of disease or vaccination against varicella. Should an exposure occur in a health care setting, exposed, susceptible personnel and patients should be identified as soon as possible. Varicella-zoster immune globulin (VZIG) given within 96 hours of exposure may prevent or modify disease in susceptible close contacts of cases. All exposed, susceptible patients should be isolated. All exposed, susceptible personnel should be either furloughed or excused from patient contact from day 8 to day 21 after exposure to an infectious patient. Varicella vaccine is recommended for all susceptible contacts.

P **Daycare setting:**
Varicella vaccine is recommended for susceptible children.

EXCLUSION:

P At least five days after the eruption first appears or until vesicles become dry.
P Avoid contact with suceptibles.
P In the hospital, strict isolation is appropriate because of the risk of serious varicella in immunocompromised susceptible patients.

Appendix

Invasive *Haemophilus influenzae* type b Case Track Record

Rash/Fever Case Track Record

Mumps Case Track Record

Pertussis Case Track Record

Chickenpox Reporting Pad